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ABSTRACT

The purposes of this study were to learn more about what students do who have one or more of their classes cancelled and to determine the fiscal efficacy of current college procedures with regard to cancelling classes having an enrollment of less than fifteen. A random sample of 918 was drawn from the entire student body as a control group, compared with all 767 students registered in cancelled classes in the fall of 1975. The main comparisons centered on changes in credit hour loads between the first and third weeks of classes. Loss of revenue was calculated at current tuition rates of $20 per credit hour, along with state aid of $700 per full-time equivalent student. It was found that (1) being in a cancelled class appears to increase the probability that a student will drop out of college completely; (2) a greater proportion of students in cancelled classes had originally enrolled in three or fewer credit hours than control group students; (3) the credit hour load of cancelled class students was less stable; and (4) students who were in cancelled classes tended to end with lighter loads than control group students. While all students averaged together decreased their credit load, the drop was five times greater for the cancelled class group. A hypothetical financial model based on these student behaviors demonstrated that the economics of cancelled classes with fewer than fifteen students may be misleading and grossly overstated. (RT)

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A STUDY OF THE IMPACT

OF

CANCELLING CLASSES

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by

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MONTGOMERY COLLEGE

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1. THE PROBLEM

Montgomery College continually offers attractive courses and while successful at this, certain courses are registered for by only a small number of students because of their specialized nature, times that students find inconvenient, or other reasons. Thus, criteria and procedures must be established to aid in deciding which courses are to be held. Economic constraints constitute one of the factors to be considered in establishing such criteria.

Presently, Montgomery College requires a minimum enrollment of fifteen students if a course is to be held. Each semester many sections of courses fail to meet this requirement. For example, in the spring semester of 1976, 115 sections of courses initially listed in the schedule of classes were cancelled on the Rockville Campus. What happens to students who have one of their classes cancelled is presently unknown. While surely some of these substitute another course, it cannot be assumed that all do. If students who are involved in cancelled classes do not retain the same credit hour load, the economic feasibility of cancelling some of these classes may be questioned. In particular, the fifteen student minimum may not be optimal.

The purpose of this study is directed toward learning more about what students do who have one or more of their classes cancelled. When this is known, it may be possible to look at the fiscal efficacy of current College procedures with regard to cancelling classes.

2. THE METHODOLOGY

In this study, those students who initially registered for classes which were later cancelled are compared with an appropriate control group

on a number of important variables: (1) the proportion of students who withdraw completely by the third week of classes, (2) the proportion of students who change their credit hour load between the first and third week of classes, (3) the direction of that change, (4) the beginning and ending average credit hour load, and (5) the average change in credit hour load. In addition, the study compares those members of the study group whose cancelled class had seven or more students enrolled with those whose cancelled class had less than seven on these same variables since alternative criteria for minimum class size which might be proposed would probably fall in the seven to fifteen range. Differences found between these groups may be important in determining whether or not a new criterion value is appropriate.

Once descriptive information is available on students involved in cancelled classes in comparison to other Montgomery College students, it is possible to formulate a model to examine the alternatives of cancelling or not cancelling a class with less than fifteen students enrolled, in terms of expected cost and revenue. Such a model is the second major focus of this study.

3. THE POPULATION

A total of 767 students who enrolled on the Rockville Campus of Montgomery College for the fall semester of 1975 registered for classes which were later cancelled. These students constituted the entire target population of those involved in cancelled classes, referrred to in this report as the cancelled class group. The entire student body enrolled on the Rockville Campus for that same semester was another target population used as a comparison. A random sample of 918 students from this group,

approximately one in ten, was drawn. This sample constituted the baseline control group.

The main comparisons of these groups center on changes in credit hour loads between the first and third weeks of classes. The impact of cancelling classes on student loads are reflected here. The study focused on those students who were involved in a change of credit hour load between the first and third weeks of the semester. Therefore, some of the comparisons that follow use subsamples consisting of those students who were enrolled for a different number of credit hours at the end of the third week than at the first week. Excluded from some of the comparisons are those students who withdrew completely from the College during the first three weeks of classes. These withdrawing students are interesting in their own right and will be discussed first. When possible, information based on the entire samples is presented.

The enrollment data for each of the groups were used to design a hypothetical model involving cost and benefit of conducting or not conducting a class with less than fifteen students enrolled. Loss of revenue was calculated according to the current tuition rates for Montgomery County residents: $20 per credit hour, along with concurrent State aid at $700 per FTE. This model is presented subsequent to the analyses of the data from the comparison group.

4. THE FINDINGS

Students Who Withdrew From Classes

Thirty-three (4%) students from the baseline control group withdrew their initial registration by the third week of classes. In contrast, 48 (6%) students from the cancelled class group decided to withdraw during the

same period. (Table I). Thus, being in a cancelled class appears to increase the probability that a student will drop out of college completely. The impact of this difference depends upon the number of credit hours lost in each case. A greater proportion of students in the cancelled class group who effected total withdrawals had originally enrolled in three or fewer credit hours than those in the baseline control group. Students who were enrolled in the cancelled classes and subsequently withdrew from the College had a lower beginning credit hour load (5.07) on the average than their counterparts in the control group (7.45). Thus, while students involved in cancelled classes were more likely to withdraw than students in the baseline group, those who did withdraw tended to start with fewer credit hours than corresponding students in the baseline group. Apparently, students initially enrolled in two courses and experiencing a class cancellation in one are likely to drop the other also.

Students Who Changed Their Credit Hour Load

Of the 885 students from the baseline control group who remained enrolled at the end of the third week, 165, (19%) changed their credit hour load between the first and third weeks. This means they either added or changed one or more courses. The credit hour load of the cancelled class group was much less stable as almost one-half of these students changed their loads during the first three weeks of classes. (Table II).

Fifty-eight (35%) of the 165 students from the baseline control group who changed their load increased it, while the other 107 (65%) students decreased their credit hour load. This tendency was even more acute within the cancelled class group. Only 22 percent (74) of these students increased their credit hour load, while the remainder (78%) showed a decrease. (Table III). Thus, the students who were in the

TABLE I

STUDENTS WHO WITHDREW FROM CLASSES

	WITHDREW	REMAIN ENROLLED	TOTAL
Baseline Control Group	33	885	918
Percent	4%	96%	100%
Cancelled Class Group	48	719	767
Percent	6%	94%	100%

TABLE II

STUDENTS REMAINING ENROLLED WHO CHANGED THEIR CREDIT HOUR LOAD

	CHANGE	NO CHANGE	TOTAL
Baseline Control Group	165	720	885
Percent	19%	81%	100%
Cancelled Class Group	342	377	719
Percent	48%	52%	100%

TABLE III

DIRECTION OF CHANGE OF CREDIT HOUR LOAD

	INCREASED HOURS	DECREASED HOURS	TOTAL WHO CHANGED
Baseline Control Group	58	107	165
Percent	35%	65%	100%
Cancelled Class Group	74	268	342
Percent	22%	78%	100%

cancelled classes tended to end up with lighter loads than the regular students.

Average Changes in Credit Hour Load

The 165 students from the baseline group who remained enrolled at the end of the third week but who had changed their load were initially enrolled for 12.38 credit hours on the average. By the third week of the semester, this figure had dropped to 11.55 credit hours, a decrease of .83 credit hours per student or -6.7 percent. The initial average load of comparable students from the cancelled class group was 12.81 credit hours, while the ending average load was 11.07 credit hours, a decrease of 1.74 credit hours per student or -13.6 percent. In both cases a net decrease occurs despite the fact that some of the students actually increased their load. Thus, the average decrease in credit hour load for the cancelled class group appears to be double that of the control group. (Table IV).

These figures describe only those students who were involved in a change in their total credit hour load. They do not reflect the differences between the groups with regard to the tendency to change loads. When one includes all 885 students in the baseline control group who remained enrolled, the average load shows a decrease of .16 credit hours. A comparable analysis of the cancelled class group, based on 719 students, indicates an average decrease of .86 credit hours. The greater separation between the groups produced here reflects the different probability of changing loads. In summary then, students on the average show a decrease in credit hour load between the first and third week of classes, but for those who have one of their classes cancelled, this drop in hours is five times greater than the typical Montgomery College student.

TABLE IV

AVERAGE CREDIT HOUR LOAD OF STUDENTS
AT FIRST AND THIRD WEEK
OF CLASS

	FIRST WEEK	THIRD WEEK	DIFFERENCE	PERCENT DIFFERENCE
Baseline Control Group				
average load of students involved in change (N=165)	12.38	11.55	-.83	-6.7%
average load change for entire group (N=885)	-	-	-.16	-
Cancelled Class Group				
average load of students involved in change (N=342)	12.81	11.07	-1174	-13.6%
average load change for entire group (N=719)	-	-	-.86	-

Students apparently do not enroll in an alternate course when one is cancelled.

Number of Students in a Cancelled Class

The students who were involved in cancelled classes were further analyzed in terms of whether or not the class cancelled had seven or more students enrolled. Differences resulting from this breakdown were so slight as to be negligible, although more students were in the larger class category. The percentages of those who decreased their load and those who increased their load were virtually identical to each other and to the overall figure for the cancelled class group. (Table V). While the seven or more students category showed a 13.9 percent decrease in average credit hour load, the under-seven students category demonstrated a 12.9 percent decrease. (Table VI).

Changing the Criterion Value for Cancelling Classes: A Financial Model

Based upon the data discussed above, it is possible to formulate a model of what would happen if the present criterion value of fifteen students for a class to be held were lowered. It has been suggested that since those involved in cancelled classes do not necessarily retain the same load by registering for other courses, it may not be economically advantageous to retain the fifteen student criterion. Such a model as presented below, however, can only be taken as suggestive since a refined model would probably need to incorporate additional variables not considered here.

In a hypothetical situation, assume twenty-four students register for two distinct courses, twelve in each course. Assume also that each course represents an instructional cost to the College of $750, or $1500 for both. This represents the lowest cost figure of those courses

TABLE V

DIRECTION OF CHANGE IN HOURS OF STUDENTS
INVOLVED IN CANCELLED CLASSES BY
NUMBER OF STUDENTS ENROLLED

CLASS SIZE	INCREASED HOURS	DECREASED HOURS	TOTAL WHO CHANGED
Seven or more students	51	186	237
Percent	22%	78%	100%
Less than seven students	23	82	105
Percent	22%	78%	100%

TABLE VI

AVERAGE CREDIT HOUR LOADS OF STUDENTS
INVOLVED IN CANCELLED CLASSES BY
NUMBER OF STUDENTS ENROLLED

CLASS SIZE	INITIAL CREDIT HOUR LOAD	CREDIT HOUR AT END OF THE THIRD WEEK	DIFFERENCE	PERCENT DIFFERENCE
Seven or more students average credit hour load of students who changed (N=237)	12.86	11.07	-1.79	-13.9%
Less than seven students average credit hour load of students who changed (N=105)	12.71	11.07	-1.64	-12.9%

cancelled for the spring semester of 1976. Under ordinary circumstances these courses would be cancelled. It has been shown previously that changes in enrollment by students between the first and third week of classes differ according to whether or not they have one of their classes cancelled. Treating these hypothetical courses first as if they were cancelled and then as if they were held, it is possible in each case to compute expected changes in credit hour load and corresponding expected changes in revenue from tuition and State aid. These expected revenue figures under each condition, cancelled and not cancelled, can be compared to each other and to instructional costs. This essentially is the strategy in the following analysis.

First, if both of these classes are cancelled as is presently the rule, certain behaviors can be expected of these twenty-four students. One or two (1.51) students initially registered for about five (5.07) credits whould withdraw completely for a total loss to the College of between seven and eight (7.66) credit hours. About half (11.33) of the remaining twenty-two or twenty-three students will retain the same load, enrolling for other courses. Of the remaining students (11.16), some (21.6%) will increase their load while most (78.4%) will decrease. Overall, the average change in load for those who do change will be a decrease of close to two (1.74) credit hours per student for a loss of nearly twenty (19.45) credit hours. The total loss of credit hours then, from total withdrawals and changes in credit hour load, comes to approximately twenty-seven (27.11) from these twenty-four students. Assuming all students are Montgomery County residents, this represents a loss in tuition of $542.20 and a loss in State aid of $632.56 for a total loss of $1174.76. To have held the classes would have cost at least $1500 in instructional salaries.

A somewhat different outcome would be expected if these classes were permitted to be held.[1] Possibly one (.86) of the students who initially enrolled for about seven (7.45) credit hours would withdraw completely anyway, resulting in a loss of about six to seven (6.41) credit hours. Another four (4.3) students could be expected to change their load, with a net decrease of about three to four (3.57) credit hours. The ten (9.98) credit hours thereby lost represents $199.60 in tuition and $232.87 in State aid, totaling $432.47. This again assumes all students are Montgomery County residents.

Thus, while the appearance is given that cancelling the two classes saved the College $1500 in instructional costs the saving was, in effect, only about $325.24. Likewise, if the classes were held they would generate $720.00 in tuition and $840.00 in State aid or $1560. However, the net revenue realized would be only $1127.53 due to normal attrition. Other considerations such as the College's responsibility to serve students, the necessity to distribute classes throughout the day, and utilization of instructional resources must be included along with financial considerations when establishing minimal class sizes.

As mentioned before, this model is only suggestive. In determining an optimal cut-off value for holding classes, other considerations enter which are not purely financial. Even in determining an optimal from a financial standpoint, many additional variables may need to be considered.

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[1] Since figures from the baseline control group represent "typical" students, including some who were involved in cancelled classes, the following data are slight overestimates when used to describe only students who were not involved in cancelled classes. The reader should keep this in mind, although it does not significantly alter the analysis or conclusions.

For example, if some students who have a class cancelled add on the size of other classes, at what point does increasing class size discourage registration of other students? Is it possible to predict, using other variables, which students do and do not retain their equivalent load when a class is cancelled?

The model presented is based on data describing student behavior under the present criterion value for holding classes. It assumes that changing the criterion value of fifteen students in itself would not change the way students behave. Is this assumption valid? These and other questions need to be answered for development of a refined model which ideally would be computerized. From what is known now, however, the economics of cancelled classes with fewer than fifteen students may be misleading and grossly overstated.

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